LAND SURVEYS
FOR
RIGHTS OF WAY

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April 1991

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PREFACE

The material presented here came from a variety of sources. Some came from existing training materials used in the various districts, some came from individuals throughout the Department of Transportation, and some came from attorneys, surveyors, title people, old timers and others from the private sector and other public agencies.

Some individuals, however, merit special recognition. **Jim McCavitt** of the Bureau of land Management office in Sacramento has been most helpful particularly with regard to the BLM as a source of information. **Daniel D. Nealand** of the National Archives - Pacific Sierra Region in San Bruno and **Laura McCarthy** of the National Archives - Pacific Southwest Region in Laguna Niguel were patient and helpful in explaining what kinds of records and maps they have available and how to retrieve them.

Don Hunter of Headquarters Geometronics wrote the historical portion of Chapter 2 and **Marv Pellett** of District 5 Surveys wrote a portion of Chapter 3. **Chuck Andrus**, District 9 R/W Engineer made a number of detailed suggestions, most of which have been included in the text. **Vance Breshears** of District 11 Surveys made significant contributions throughout the text. **Lloyd West** of District 4 Surveys contributed the sketches relating to water boundaries in Chapter 2.

David Goodman of Headquarters Geometronics, **Erv Jenness**, Headquarters R/W Engineer and **Boyd Webb**, currently District 2 R/W Engineer helped make the difficult decisions that needed to be made. All were patient and encouraging. The author is grateful to them all.

INTRODUCTION

The practice of land surveying throughout the country is experiencing radical change brought about in part by dramatic recent advances in technology. Distances are now measured electronically and positions, both horizontal and vertical, can be obtained with the aid of satellites. Land values have continued to climb forcing a new recognition of the need for accurate retracement of boundaries. This has led to a new emphasis on the legal responsibilities and obligations of land surveyors.

A natural result of all this is the increasing desire expressed by land surveyors all over the country to call themselves "professionals." Some are calling for a requirement that new land surveyors have a 4 year degree in surveying.

The Department of Transportation has not escaped these changes. Land Surveying is gaining recognition throughout the organization for what it really is: a profession.

The Department continues to be the largest land surveying organization in the state. Each year, thousands of parcels are "split," many miles of new right-of-way are created and numerous boundary monuments of "major importance" are destroyed by new construction. Our responsibility to properly retrace property lines, prepare good, insurable legal descriptions, and to repair the damage we do to the land net is great indeed. Both the law and professional ethics require that we respond with a quality product and produce it in a timely manner.

We, unlike private land surveyors, do not have the option of saying "no" to a given parcel because of boundary problems, pending litigation, and other reasons. We must push ahead, make the decisions that need to be made, and get the job done in order that the transportation facility can be built and made available to the public. Decisiveness is a necessary qualification for the Department's land surveyors.

Every organization, including ours, has an abundance of "starters," but a shortage of "finishers." Many of us can "start" a job and bring it along to the point where it is 80% or 90% complete, but then resistance sets in. The decisions that remain to be made are difficult, unpleasant, and risky. We are reluctant to make these decisions due to lack of training, lack of experience, a shortage of data, or simply a lack of courage. We fear the embarrassment that would come our way if we made the wrong choice.

On the other hand, a "finisher" has the courage to make the final decisions (knowing full well that there is a chance one of them will be bad), assemble the package, sign it and send it on to the next person. The purpose of this course is to provide some of the tools needed to help make those difficult decisions. The necessary courage is up to the student.

Ample opportunity will be provided throughout the course for students to analyze problems, prepare solutions, publicly defend them, and then listen as the class and the teachers test them.

The Caltrans Surveys Manual defines land surveys as:

The process of determining boundaries and areas of tracts of land. Included within this broad term are - Cadastral Surveys, Property Surveys, Boundary Surveys, Retracement Surveys and Resurveys. Within CALTRANS the term includes both the office function of Right of Way Engineering and the field function of the Surveys Branch.

This course is designed to prepare the personnel in the Caltrans Surveys and Right of Way Engineering Branches to perform their land surveying activities in a professional manner. It is not possible, of course, to cover every situation a surveyor might encounter, but certain basic principles are covered as well as some important research techniques. The material is really a supplement to Chapter 10 of the Surveys Manual.

One of the more important functions of the Department of Transportation is the location of rights-of-way with respect to adjacent property. This function involves what is known as property breakdown or boundary determination and is one of the "phases" in the Department's land surveying operation. The Surveying for Rights-of-Way section of the Surveys Manual lists three basic phases of land surveying: Retracement; Land division; Monumentation and Perpetuation.

The "operation" of positioning property lines is the fourth and final operation in the retracement phase of land surveys. It follows the operations of recovery, field ties and data reduction, and monument renewal and restoration.

Ownership lines are established to enable or aid in determining:

The relation of property lines to right-of-way requirements.
Total ownership areas.
Right-of-way areas.
Areas to be retained by the property owner and areas to be acquired as excess.

INTRODUCTION

Property lines are established and indicated by acts on the ground or by legal documents. Thus, old boundaries are located on the basis of acts and documents exercised in the past. The creation of new parcels of land, such as those created by right-of-way acquisition, is dependent upon the correct interpretation of those acts and documents.

In DEFINITIONS OF SURVEYING AND ASSOCIATED TERMS by the American Congress on Surveying and Mapping and the American Society of Civil Engineers, land boundary is defined as:

A line of demarcation between adjoining parcels of land. The parcels may be of the same or of different ownership, but distinguished at some time in the history of their descent by separate legal descriptions. A land boundary may be marked on the ground by material monuments placed primarily for the purpose; by fences, hedges, ditches, roads, and other service structures along the line - or defined by astronomically described points and lines; by coordinates on a survey system whose position on the ground is witnessed by material monuments which are established without reference to the boundary line; by reference to adjoining present or previous owners; and by various other methods.

The practice of boundary determination is one that must consider the laws that pertain to boundary location. Few problems confronting those who work in boundary determination can be solved by applying only exact sciences; they also depend on law, an inexact science. To correctly locate a described parcel of land is to locate its boundaries where a court of competent jurisdiction would locate them. To know where a court would locate the property boundaries, there must be an expert knowledge of the laws pertaining to boundaries.

Knowledge of what was done in the past is an indispensable tool in boundary determination; how measurements were made; the accuracies that could be attained with available instruments; the materials customarily used for the monuments; the laws that were in force at a given time. According to decisions in previous court cases, surveyors, in retracing old property lines, are obligated to follow the "footsteps of the original surveyor"; therefore it is essential that in their areas of practice they have knowledge of the historical background of land surveys and existing laws under which they were performed.

Material to be covered in this course includes:

Research
Hardcopy Map (Preliminary Map)
Original land net
Parcels created in sequence
Parcels created simultaneously
Water boundaries
Railroads
Easements and Rights-of-Way
The right-of-way map
Field surveys based on State recorded documents
Unrecorded surveys

The objectives in preparing and presenting this material are:

to assist those involved in determining the location of real property to fulfill their legal and professional responsibilities.

to establish a standard procedure for gathering and analyzing all of the available evidence necessary to make a correct boundary location.

to properly document the steps taken to arrive at a correct boundary location.

to teach the techniques of writing legal descriptions of new parcels.

The course will assist personnel who are involved in the office and field functions of land surveying to meet their obligations to those from whom we acquire land, adjoining property owners, other land survey practitioners, and to the citizens of California.